



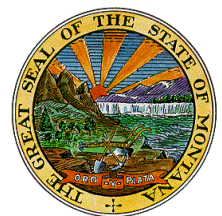
Implementation Guidance for 75-5-222(2), MCA (Variances)

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SUMMARY

This document provides guidance to MPDES permittees and others who are interested in the application process for a variance from water quality standards under Montana statute (75-5-222(2), MCA). This guidance has been arranged so that the user can first determine if they are even eligible to apply for a variance. If yes, procedures, example scenarios, and dataset requirements are then provided to the user. If at any time a user of this document has any questions about its content, they should contact staff of the DEQ's Water Quality Standards & Modeling Section.

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ACRONYMS

Acronym	Definition
C _s	Background Receiving Water Concentration
DEQ	Department of Environmental Quality (Montana)
EPA	United States Environmental Protection Agency
IQR	Interquartile Range
MCA	Montana Code Annotated
RRV	Required Reporting Value
TMDL	Total Maximum Daily Load
40 CFR	Title 40 of the Code of Federal Regulations

1.0 INTRODUCTION

The purpose of this document is to provide guidance for implementing Section 75-5-222(2), Montana Code Annotated (MCA), and rules that have been written under that provision of the Water Quality Act, pertaining to variances from water quality standards in water bodies or water body segments where the water quality standard is more stringent than the condition of the waterbody. This guidance was developed cooperatively between DEQ and an advisory group that met and discussed the topic with DEQ between January and September 2016. Minutes of the group's discourse may be found at <http://deq.mt.gov/Water/WQPB/standards/SB325Rulemaking>.

1.1 GUIDANCE OVERVIEW

The figure below summarizes the basic flow path of activities an applicant and DEQ should consider when determining if a variance under 75-5-222(2), MCA is appropriate.

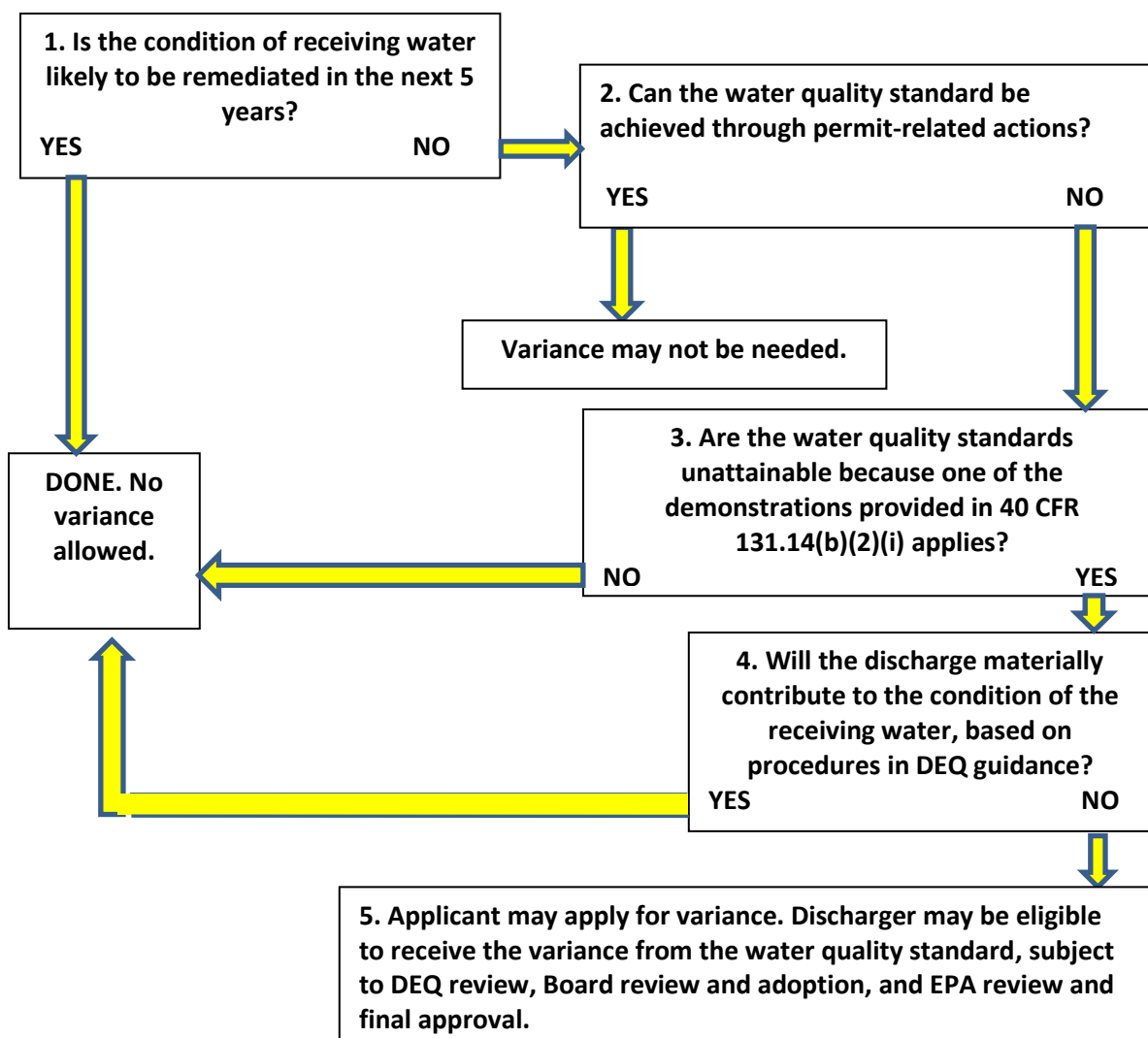


Figure 1-1. Overview of Activities Presented in this Guidance Document.

2.0 DETERMINING IF A VARIANCE IS APPROPRIATE

The following sections provide details on the considerations for variance under §75-5-222(2), MCA presented in **Figure 1-1**.

2.1 WILL THE CONDITION BE REMEDIATED IN THE NEXT 5 YEARS?

The first step in determining whether a variance is appropriate is to determine whether the water quality condition will be remediated in the next five years. Section 75-5-222(2), MCA provides that if the condition of the waterbody cannot reasonably be expected to be remediated during the permit term (a five-year period), a discharger may pursue a variance in accordance with the Board's rules adopted under §75-5-222(2), MCA.

What information must an applicant submit for DEQ to determine if a water quality problem will be remediated within the next 5 years? The potential applicant should first check with the DEQ's Waste Management and Remediation Division. That Division is responsible for overseeing cleanup activities at state and federal Superfund sites, abandoned mine lands, etc., and would be aware if anything is planned or ongoing at the waterbody in question. Contacts for this DEQ Division can be found at:

<http://deq.mt.gov/DEQAdmin/about/DEQStaffDirectory#rem>

This is one potential source of information. The applicant should compile a site history, which could include information from state, federal and local government. Also, if there is an ongoing activity (such as mining) there should be an active permit and reclamation plan.

If there is no definitive answer that the water quality condition of the receiving water will be remediated within 5 years, the applicant can presume the answer is "no", and move to Box 2 of **Figure 1-1**.

2.2 OTHER PERMIT-RELATED ACTIONS PRECLUDE THE NEED FOR THE VARIANCE

The second step is determining whether there are permit-related actions in place (e.g., Total Maximum Daily Load (TMDL) stating the discharge is a non-significant contribution to the water pollution problem) that provide the potential applicant options that may preclude the need for a variance application. A permit-related action via a TMDL finding of non-significance does not automatically preclude the potential applicant from being able to pursue a variance (**Figure 1-1**), but informs the discharger that another option may be available; allowing the discharger to make an informed decision whether or not to move forward with a variance application. TMDLs are completed and then implemented in permits in the Water Protection Bureau. TMDLs can be complex documents to navigate, but information concerning TMDLs may be obtained by contacting TMDL staff (<http://deq.mt.gov/Water/WQPB/TMDL/tmdlContacts>). The permit writer assigned to the facility in question should also be contacted as they have information on how the TMDL is being implemented through permit limits. The TMDL webpage can be accessed at the following link:

<http://deq.mt.gov/water/wqpb/TMDL>

2.3 DOES ONE OF THE APPLICABLE DEMONSTRATIONS IN 40 CFR 131.14(b)(2)(i) APPLY?

EPA requires that one of the demonstrations in 40 CFR 131.14(b)(2)(i) be met before a variance from water quality standards is to be allowed. Per EPA's requirements, EPA review and approval of the variance is required. Montana statute requires the board to "adopt rules consistent with comparable federal rule and guidelines..." (75-5-222(2)(a), MCA). An applicant for a variance must demonstrate that one of the factors is met. Among the demonstrations set forth in 40 CFR 131.14(b)(2)(i), the two listed below are the most likely to apply to an applicant for a variance under §75-5-222(2), MCA:

- A. Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place (see 40 CFR 131.10(g)(3); or
- B. Controls more stringent than those required by sections 301(b) and 306 of the Act¹ would result in substantial and widespread economic and social impact (See 40 CFR 131.10(g)(6)).

Applicants for variance should note that factor A above (which corresponds to EPA's factor 3 for determination of use nonattainability at 40 CFR 131.10(g)(3)) has not been accepted so far as a variance rationale by EPA. Further, the exact means by which an applicant would carry out the demonstration is not clear at this time. Applicants considering using factor A above should consult with DEQ's Water Quality Standard & Modeling Section staff before commencing any analysis.

Factor B (which corresponds to EPA's factor 6 for determination of use nonattainability at 40 CFR 131.10(g)(6)) requires the applicant to demonstrate that achieving the water quality standard end-of-pipe (for example, in **Figure 2-1**, this would be 25 mg/L) would cause substantial and widespread economic impact to the affected community. DEQ has developed extensive and detailed guidance on how to carry out the substantial and widespread analysis for permittee's in both the public and private sector. Please see Section 3 of DEQ's "Base Numeric Nutrient Standards Implementation Guidance, Version 1" (Montana Department of Environmental Quality 2014) located at: <http://deq.mt.gov/Water/WQPB/Standards>

Excel spreadsheets containing all the calculations necessary to complete the substantial and widespread analysis can be obtained from DEQ's Water Quality Standards & Modeling Section.

2.4 DETERMINING IF THE DISCHARGE WILL MATERIALLY CONTRIBUTE TO THE CONDITION

Each situation will be different and the exact method by which DEQ determines material contribution to the condition of the receiving water body will vary. Pollutants are grouped—based on risk to both human health and the environment—as carcinogens, toxics, and harmful parameters, and each grouping will be treated according to the properties of the pollutants in the group. Pollutant groups may be

¹ The two CWA sections referenced pertain to the national secondary treatment standards for municipal waste (303(b)) and the national standards for performance for specific industrial discharger categories (306). Effluent limits based on water quality standards, for example those in Circular DEQ-7 (Montana Department of Environmental Quality 2012) are usually more stringent than these requirements.

further categorized as necessary (e.g. metals, salinity, etc.) to inform the material contribution analysis. DEQ may be more stringent when reviewing variance for carcinogens vs. toxics vs. harmful parameters. One scenario likely to be encountered is provided below, with **Figures 2-1** and **2-2** presented to illustrate how DEQ may consider material contribution to a water quality condition from a discharge.

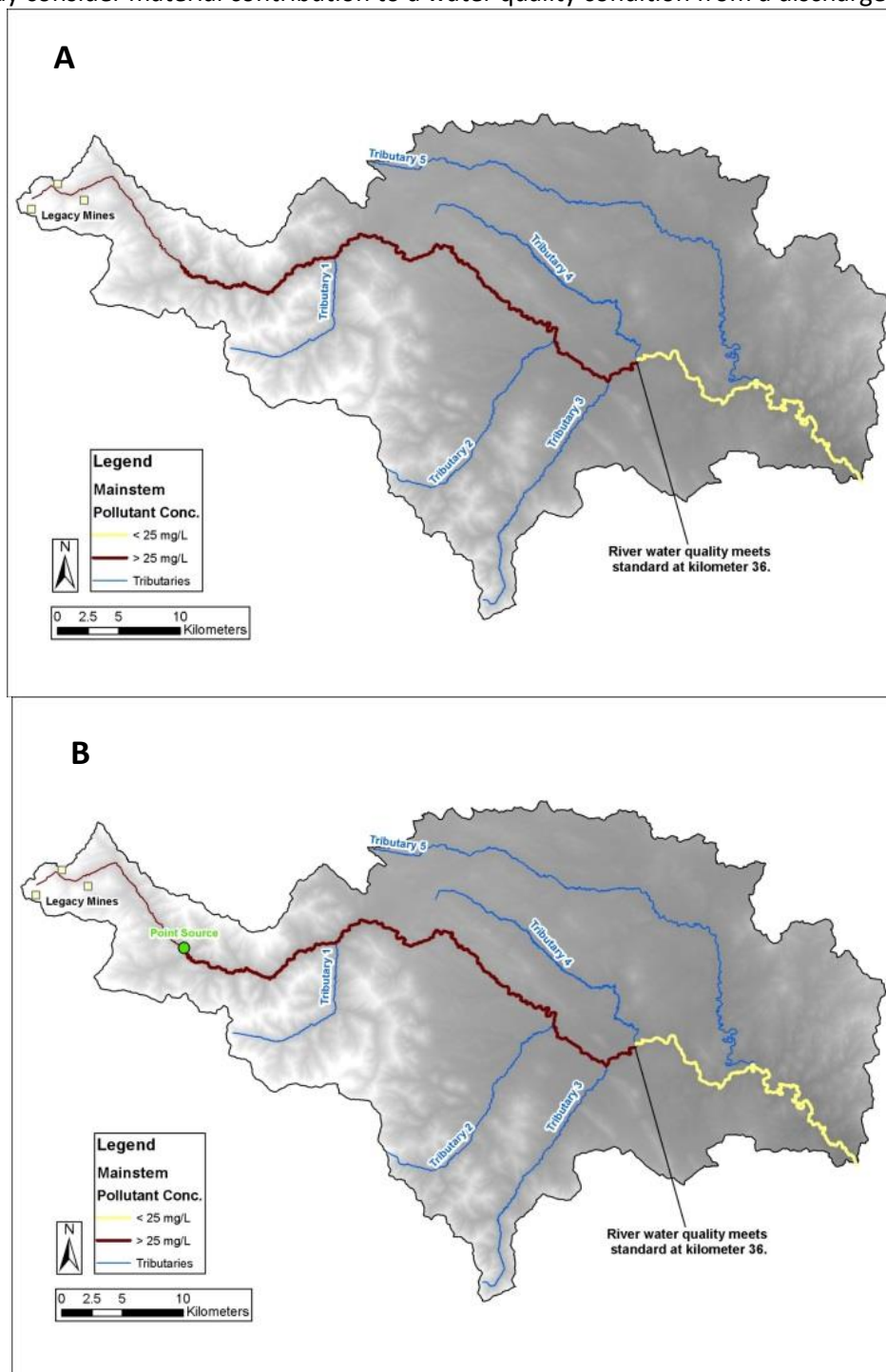


Figure 2-1. Example scenarios which may or may not materially contribute to the water quality condition.

A. Due to legacy mining in the headwaters, the hypothetical water quality standard (25 mg/L) would not be attained until km 36 of the river, even if there were no point source in the watershed. **B.** Here, a point source is discharging to the non-attaining reach, but it does not extend the longitudinal length of the reach which does not attain the standard; the point source may or may not materially contribute (see discussion in text).

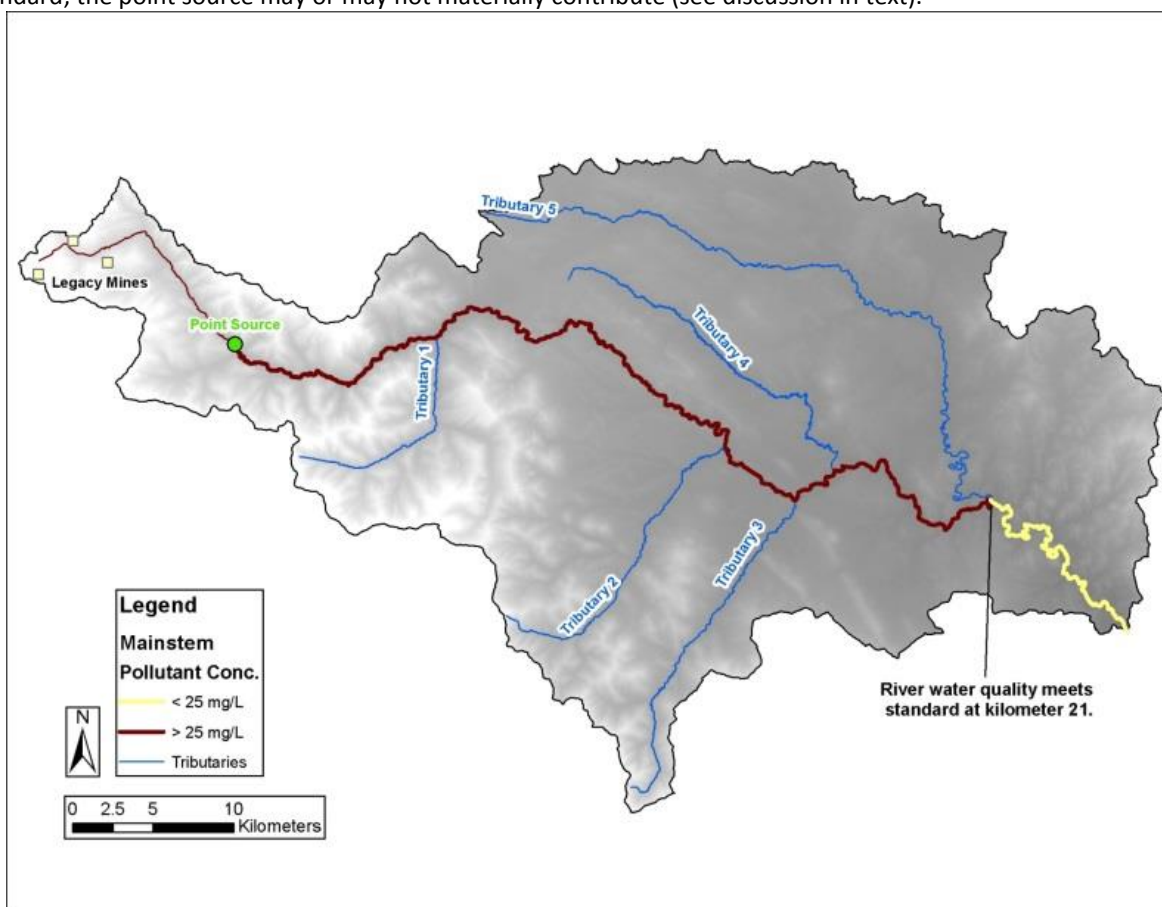


Figure 2-2. Example scenario which does materially contribute to the water quality condition.

Due to legacy mining in the headwaters, the hypothetical water quality standard (25 mg/L) would not be attained until the confluence with tributary 4, even if there were no point source in the watershed. Due to the point source's additional contribution, the standard is not attained for an additional 15 km of river, compared to **Figure 2-1B**; here, the point source does materially contribute.

In **Figure 2-1A**, the affected river is shown as it would exist even if the point source was not present (this hypothetical situation can readily be back-calculated using ambient data and facility discharge data). In **Figure 2-1B**, the point source is present but has not extended the distance over which the standard is not attained. It may or may not be materially contributing, depending upon how much more above the standard it has elevated the concentration of the pollutant of concern in the non-attaining reach. There are no hard and fast rules regarding "how much is too much" above ambient conditions, but as a guide, DEQ would evaluate carcinogens most stringently, then toxics, and then harmful parameters. Depending on the degree of increase and the parameter, it may result that the scenario in **Figure 2-1B** does (or does not) materially contribute to the water quality condition. **Figure 2-2** denotes the case where the length of river above the water quality standard has been substantially extended longitudinally due to the point source, and regardless of the parameter, this would be considered material contribution.

DEQ will use its discretion, on a case-by-case basis, to determine what is reasonable when carrying out these evaluations. For example, it may result that a point source only extends the non-attainment reach for an additional 100m (and the concentration increases within the non-attaining reach are not substantial); this small difference in extent and magnitude of the parameter could probably be considered as “not materially contributing”.

If the applicant has demonstrated one of the factors applies, and has met the other conditions of the statute, as outlined in **Figure 1-1**, the applicant is eligible to apply for a variance under §75-5-222(2), MCA from the water quality standard in question.

3.0 DATASET MINIMUMS TO CARRY OUT SECTION 2.0 EVALUATIONS

DEQ has calculation procedures, provided in **Box 3-1**, for estimating background receiving water pollutant concentration (C_s) using the interquartile range (IQR) of the available data. The IQR is a resistant or nonparametric estimator of C_s . To estimate background receiving water conditions, DEQ will generally require a minimum of 10 samples from the up-gradient receiving water within the previous three (3) to five (5) year period. A minimum of two (2) samples should be available for each calendar quarter. However, these data need not be collected in contiguous years; for example, 10 total samples from 2012, 2015, and 2016 would be acceptable.

The IQR is defined as the 75th percentile value (C_{75}) minus the 25th percentile value (C_{25}) of the sample data (Helsel and Hirsch, 2002). In cases where long term data are available (i.e., a sample size greater than 30), a 90% confidence interval may be substituted for the interquartile range. In this case, the upper bound of the 90% confidence interval may be used instead of the 75th percentile of the interquartile range. In either case, only data that have achieved a required reporting value (RRV) that meets the RRVs in Circular DEQ-7 should be used for this determination.

Box 3-1. Determining C_s

If the total number of measurements in the selected data set is ≥ 10 :

For water quality standards expressed as an absolute value (e.g., 2 mg/L):

- If C_{75} is a quantified value, set C_s = upper bound of the interquartile range (i.e., 75th percentile of the data) or 90% confidence interval
- If C_{75} is a non-quantified value (i.e., the dataset comprises all or nearly all non-detects):
 - if $RRV < \text{water quality standard}$, set $C_s = \frac{1}{2} RRV$

For water quality standards expressed as a relative value based on background concentration:

- If C_{25} is a quantified value, set C_s = lower bound of the interquartile range (i.e., 25th percentile of the data)
- If C_{25} is a non-quantified value, set $C_s = 0$

If the total number of measurements in the selected data set is < 10 :

For existing dischargers, no analysis can usually be completed; permit writer will usually develop special condition requiring quarterly up-gradient ambient monitoring for the pollutant of concern to be included in the permit. *Regarding a variance application, consult with DEQ's Water Quality Standards & Modeling Section on how to proceed.*

4.0 REVIEWING THE VARIANCE: GUIDANCE ON CHARACTERIZING UPSTREAM WATER QUALITY OVER THE PREVIOUS VARIANCE PERIOD

If remediation activities have not been undertaken in the watershed upstream of a permittee who has received a variance, DEQ will generally require an up-gradient dataset minimum of 10 samples, with a minimum of 2 per year, in order to review the variance justification. These dataset requirements are the same as presented in **Section 3.0**. However, if remediation activities *have* occurred, **NEW RULE X** requires water quality upstream of the discharge to be characterized for the most recent past two years. In order to derive a reasonable interquartile range for that time period, DEQ will require a minimum of 10 samples from the receiving waterbody for the most recent past two year period. This means a minimum of quarterly sampling plus one additional sample each year. Recipients of variances should contact DEQ (Water Quality Standards & Modeling Section) to determine if there is a critical period during which these data would best be collected (e.g., depending on the pollutant, it may be more important to collect more samples during runoff, or during summer baseflow).

DEQ will analyze the data to determine the water quality upstream of the discharge. The variance will be extended, modified, or terminated based on the results of this analysis, specifically whether the water quality has improved significantly. In cases where the variance is modified or terminated, compliance schedules may be issued to assist the transition to lower water quality standards requirements.

5.0 REFERENCES

Helsel, Dennis R. and Robert M. Hirsch. 2002. "Statistical Methods in Water Resources," in *Techniques in Water-Resources Investigations*, Ch. Book 4, Ch. A3, (Reston, VA)

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<http://deg.mt.gov/Portals/112/Water/WQPB/Standards/PDF/DEQ7/FinalApprovedDEQ7.pdf>.
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40 CFR Part 131 - Water Quality Standards